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DUANE MORRIS, LLP
IP DEPARTMENT
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103-4196

EXAMINER

MAKI, STEVEN D

ART UNIT	PAPER NUMBER
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1791

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11/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/696,751

Applicant(s)

PORTER, JOHN FREDERICK

Examiner

Steven D. Maki

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-37 is/are pending in the application.
- 4a) Of the above claim(s) 19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 17,18,21-28,30-32,34,35 and 37 is/are rejected.
- 7) ☒ Claim(s) 29, 33 and 36 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application
- ☐ Other: ____.

1) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2) **Claims 17-18, 22-23, 26-28, 30-32 and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newman et al (US 6,054,205) in view of Mathieu (US 6,187,409), Galer (US 4,450,002), Canada (CA 2006149), Murphy et al (US 6,176,920) and Palmer (US 6,001,935).**

Newman et al, directed to making SMOOTH reinforced cementitious boards, discloses providing a **facing sheet comprising an open mesh glass scrim and a polymer web such as a meltblown web** (col. 2 lines 21-40). The open mesh scrim comprises transverse yarns 25 and longitudinal yarns 30 bonded together at their cross over points 35 wherein the yarn comprises glass filaments coated by an alkali and moisture resistant thermoplastic polymer coating such as polyvinyl chloride or thermosetting polymer coating such as epoxy (col. 5 lines 33-67). The meltblown web comprises thermoplastic fibers such as polypropylene fibers (col. 6 lines 1-45). Newman et al teaches joining the meltblown web to the open mesh scrim and prefers directly forming the meltblown web on the open mesh scrim such that the meltblown web adheres (unites) to the open mesh scrim (col. 2 lines 30-34, col. 3 lines 16-23, col. 6 lines 1-3). Newman et al discloses making a SMOOTH cement board by depositing a first low viscosity cementitious slurry 76 formed of a composition comprising cement on the facing sheet 72 (e.g. facing sheet comprising the open mesh scrim and meltblown

web), *optionally* depositing a second higher viscosity cementitious slurry 93 on the deposited layer of the first cementitious slurry 76, *optionally* depositing a low viscosity third slurry 91 on a facing sheet 10 comprising the open mesh scrim and meltblown web such that the low viscosity slurry generally passes through the facing sheet 10 and window panes over the mesh openings 40 to create a smooth surface on the cement board, applying the facing sheet 10 supplied from roll 70 and onto the first cementitious slurry 76 (and optionally cementitious slurry 93) such that the exposed three dimensional grid profile surface 55 on the lower face of the facing sheet 10 directly contacts the cementitious slurry(s), applying pressure with pressing rolls 80 such that facing sheet is pressed into the cementitious slurry and the cementitious slurry 76 is forced up through the mesh openings of the facing sheet 10, and hydrating the cementitious material. The meltblown web (nonwoven web) of the facing sheet maintains a portion of the cementitious slurry 76 on the surface of the glass fiber facing sheet 10 and causes the slurry to window pane the mesh openings 40 of the glass scrim 15 thereby mechanically integrating the facing sheet into the cement board and forming a substantially planar bridge surface between the transverse and longitudinal yarns. See abstract, figure 6, figure 8, col. 2 lines 13-14, 37-40, 61-63, col. 3 lines 16-67, col. 6 lines 48-59, col. 9 lines 1-67, col. 10 lines 1-37, col. 12 lines 4-17, col. 12 lines 26-30.

The following additional discussion of Newman et al is included to clarify the record: Newman et al teaches manufacturing a cement board using a single cementitious slurry (76). The second cementitious slurry (93) in Newman et al is

optional. See col. 3 lines 45-47. The additional cementitious slurry (91) in Newman et al is optional. See col. 3 lines 51-53. Figure 6 illustrates the first slurry 76, the second slurry 93 and the third slurry 91. However, a fair reading of the entirety of Newman et al reveals that cementitious slurry 76 may be used without slurries 93 and 91. Attention is directed to Newman et al's use of the term "optionally" (both occurrences) at col. 3 lines 45-53. Attention is also directed to the description of "the cementitious slurry 76 or slurries" at col. 9 line 40. When slurry 91 is not used, the cementitious slurry 76 is forced up through the mesh openings of the facing sheet and must extend at least partially through the melt blown web. This action of forcing up and extending at least partially through the nonwoven web comprising meltblown fibers must occur because Newman et al's invention is to use the meltblown web to prevent the slurry from sinking back down and forming menisci. If the slurry 76 remains below the melt blown web and the slurry 91 is not used, then the melt blown web cannot prevent the slurry 76 from sinking back down. It is acknowledged that Newman et al teaches melting the fibers of the melt blown web to form a microporous layer. This a mutually exclusive embodiment because Newman et al teaches using a basis weight of 2-30 g/m² in the embodiment in which the fibers are not melted whereas a basis weight of 45-75 g/m² is used for the melt blown web in the embodiment in which the fibers are melted to form the microporous layer. The foundation for applicant's arguments in the response filed 8-14-07, 9-4-07 and 11-5-07 is that Newman et al must use slurry 91. As explained above however, Newman et al teaches that slurry 91 can be omitted. With respect to the facings, Newman et al teaches that a facing sheet comprising a mesh and a meltblown

web may be used for both the first facing sheet (10) and the second facing sheet (72). See abstract, col. 2 lines 53-57, col. 9 lines 4-11 of Newman et al. Figure 6 of Newman et al fails to show the location of the facing sheets in the cement board. On the other hand, Figure 8 shows a cross section of the cement board and identifies a surface portion 86 of the cementitious core 80 and a surface portion 90 of the cementitious core 80. As can be seen from figure 8, the scrim 15 and melt blown web 20 are illustrated as being located in the surface portion 86 of the core instead of the surface of the cement board. As can also be seen from figure 8, the facing sheet 72 is located in surface portion 90 of the cementitious core 80 instead of the surface of the cement board. The second facing sheet 72 may comprise a meltblown polymer web joined on one surface of a scrim (col. 2 lines 53-57).

The use of a single slurry 76 is consistent with the formation of a smooth cementitious board having a cement skin adjacent an outer face. In any event: As to claims 17 and 18, it would have been obvious to one of ordinary skill in the art to penetrate the facing sheet 72 and/or the facing sheet 10 in the cementitious slurry in Newman et al's process of making a smooth cementitious board such that the facing sheet is embedded in cementitious material and a cement skin is formed since (1) Newman et al, directed to making a smooth cement board having reinforcing facing sheet(s) each comprising a open mesh scrim and a meltblown web, teaches that the meltblown web of the facing sheet maintains a portion of the cementitious slurry 76 on the surface of the glass fiber facing sheet 10 and causes the slurry to window pane the mesh openings 40 of the glass scrim 15 thereby mechanically integrating the facing

sheet into the cement board and forming a substantially planar bridge surface between the transverse and longitudinal yarns, (2) Mathieu, also directed to making a cement board having reinforcing sheets (e.g. mesh, scrim, nonwoven fabric) teaches embedding the reinforcement mesh in the cement such that the mesh is at or near the surface of the board so as to enhance the strength of the board (col. 13 lines 58-67, col. 14 lines 1-67, col. 15 lines 1-67, col. 16 lines 1-47, col. 1 lines 41-50, col. 6 lines 48-61, col. 16 lines 29-47, col. 17 lines 55-65) and (3) Galer, also directed to making a cement board having reinforcing sheets (woven mesh, scrim, nonwoven), suggests submerging the reinforcement just below one or both of the surfaces so that the mesh is covered by a smooth, continuous, uniformly thin layer of cementitious material and is properly anchored in the panel. Mathieu, which is directed to making the same type of cement board as Newman et al, provides ample suggestion to perform Newman et al's process of making a cement board such that the reinforcing facing sheet 10 is completely embedded in the cement immediately beneath the surface ("cement skin") of the cement panel. Galer, which is directed to the same type of cement board as Newman et al, motivates one of ordinary skill in the art to completely embed the reinforcing sheet 10 such that a cement skin is formed so that the reinforcing sheet is properly anchored and the desired smooth surface is formed. It is noted that Newman et al teaches and contemplates completely embedding a meltblown web in the cement because Newman et al teaches that the meltblown polymer web may be applied to both faces of the glass scrim 15 (col. 6 lines 1-3).

With respect to penetrating and forming a cement skin, the applied prior art to Mathieu and Galer provide ample suggestion / motivation to penetrate the facing sheet 10 and/or the facing sheet 72 so as to form a cement skin as claimed. Mathieu's teaches that submerging a mesh from about 0.5-2.0 mm below the surface of the board is an alternative to the mesh being at the surface of the board (col. 17 lines 55-65, col. 1 lines 41-50). Galer teaches that submerging a mesh just below the surface of the board allows one of ordinary skill in the art to obtain a smooth surface. This teaching in Galer to submerge a mesh just below the surface (form a "cement skin" covering the mesh) is highly relevant to Newman et al since Newman desires a smooth cementitious board and teaches away from a cementitious board which has pitting / indentations. With respect to forming a cement skin, the applied prior art satisfies the TSM test approved by the Supreme Court in KSR.

Newman et al does not recite promoting penetration using a hydrophilic coating on the melt blown fibers of the non-woven web 20.

Canada, also directed to making a cement board having reinforcing sheets, discloses a process of manufacturing a cement panel comprising:

arranging a **surface reinforcing layer (14)** on a surface of a forming apparatus / mold 20;
spraying an inner surface 24 of the reinforcing layer 14 with a suitable polymer (e.g. acrylic resin);

casting **cementitious material (32)** on the coated reinforcing layer 14 and vibrating the apparatus to facilitate *penetration* of the cementitious material into the coated reinforcing layer 14;

spraying a **surface reinforcing layer (16, 36)** with a suitable polymer (e.g. acrylic resin);

placing the coated reinforcing layer 36 over the cementitious material 32 and pushing the coated reinforcing layer 36 into the cementitious material 32 to facilitate *penetration* of the composition into the coated reinforcing layer 36; and curing the cement panel wherein the manufactured cement panel comprises a surface reinforcing layer on each side of a cementitious core 12.

Canada teaches that the surface reinforcing layer may be a porous fabric or paper.

Canada teaches that the fabric should be composed of an alkaline resistant material (e.g. alkali resistant polymer fibers or glass fibers coated with a polymer) so it will not be damaged and eventually destroyed by the alkaline in the cementitious composition.

Canada teaches that the fabric may be a random fiber fabric ("nonwoven fabric"). As an example of a fabric, Canada discloses suggests using a mat ("nonwoven fabric") of glass fibers coated with polymer during the manufacture of the mat. With respect to spraying the suitable polymer such as acrylic resin, Canada teaches "This polymer coating, which preferably is in addition to a polymer coating applied to the glass fiber during the manufacture of the mat, provides additional protection for the fibers of the reinforcing layer and results in a stronger bond between the central core 12 and fabric layer. One reason for the stronger bond is that the liquid polymer coating will decrease

the viscosity of the cementitious composition when it is poured into the form and this in turn permits the composition to penetrate the fabric or paper layers." (pages 13-14).

The sprayed polymer (e.g. sprayed acrylic resin) functions, therefore, as a wetting agent and enhances adhesion of fabric to an alkali cementitious matrix. In figures 3-8;

Canada shows a process of making a cement panel comprising a single fabric layer 14 and a single fabric layer 16. Canada additionally teaches "... instead of a single layer of surface-reinforcing fabric or paper on each major surface of the product, several layers of such material placed one over another can be used with the layers being adhered together by the cementitious composition and/or polymer coatings" (page 18). Canada is silent as to the polymer coated glass fibers being thermoplastic coated glass fibers.

With respect to promoting penetration, it would have been obvious to one of ordinary skill in the art to apply a hydrophilic material as claimed to the fibers of the mesh and melt blown web (non-woven web) in Newman et al's process when completely embedding and forming a cement skin as suggested by Mathieu and Galer since (1) Canada suggests spraying suitable polymer such as acrylic resin to facilitate penetration of cementitious material (i.e. cement) into fabrics, (2) Murphy et al suggests coating a scrim with water to reduce surface tension of the cementitious material and thereby facilitate complete embedment of the scrim 96 into the cementitious material (figure 5, col. 5 lines 20-39) and (3) Palmer teaches imparting a hydrophilic coating to fibers of woven or non-woven fabric made of polymer such as polypropylene where it is desirable to make the surface of the fiber more hydrophilic for better or easier

incorporation into a water-borne composition such as a cement slurry (abstract, col. 1 lines 5-23, col. 8 lines 58-64 and col. 10 lines 8-10).

Hence, Newman discloses that the cement board should have a SMOOTH surface. The secondary art to Mathieu and Galer provide ample suggestion and motivation to completely embed Newman et al's facing sheet just below the surface of the cement board so as to form the claimed "cement skin" with the expected benefits of obtaining proper anchoring, enhanced strength and a SMOOTH surface. When incorporating fibrous material into cementitious material, the applied prior art to Canada, Murphy and Palme suggest / motivate one of ordinary skill in the art to form a "hydrophilic coating" on the fibers of the mesh 15 and non-woven web 20 of the facing sheet of Newman et al to facilitate penetration of the cementitious material through the fibers of the facing sheet so as to embed the sheet in a surface portion of the core so as to be spaced from the board surface by a cement skin. With respect to the hydrophilic coating, the applied prior art satisfies the TSM test approved by the Supreme Court in KSR.

As to claims 22 and 23, Newman et al suggests using polypropylene fibers for the meltblown polymer web.

As to claim 26, the claimed heat fusing step reads on the step of adhering the meltblown fibers to the open mesh as disclosed by Newman et al.

As to claims 27-28, 30-32 and 34-35: Newman et al teaches adhering the yarns of the open mesh scrim together using polymer binder (adhesive). Canada, Murphy et al and Palmer suggest coating the mesh and nonwoven of Newman et al with

"hydrophilic compound" to facilitate the complete embedding of the facing in the cement. Palmer et al additionally suggests using wetting agents and surfactants. Newman et al teaches compacting with pressing rolls 80. Newman et al suggests using polypropylene fibers for the meltblown polymer web.

3) Claims 21 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newman et al (US 6,054,205) in view of Mathieu (US 6,187,409), Galer (US 4,450,002), Canada (CA 2006149), Murphy et al (US 6,176,920) and Palmer (US 6,001,935) as applied above and further in view of Cooper (US 6,254,817).

As to claims 21 and 37, it would have been obvious to one of ordinary skill in the art to art to form sheathed glass fibers using the claimed steps of wrapping glass fibers with fibers of alkali resistant material and heating in view of (1) Newman et al's teaching that the glass fibers should be encapsulated by alkali resistant polymer such as thermoplastic material to prevent chemical interaction between the glass fibers and cementitious material and (2) Cooper et al suggests forming alkali resistant sheathed fibers for a mesh of a cement board by using the steps of wrapping glass fibers with thermoplastic (fibers of alkali resistant material) and heating.

4) Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newman et al (US 6,054,205) in view of Mathieu (US 6,187,409), Galer (US 4,450,002), Canada (CA 2006149), Murphy et al (US 6,176,920) and Palmer (US 6,001,935) as applied above and further in view of Schupack (US 4,617,219).

As to claims 24-25, it would have been obvious to use a spunbonded web instead of a meltblown web as the nonwoven polymer web since Schupack, also

directed to making a cement board having reinforcing sheets therein, suggests using a polypropylene spunbonded as a nonwoven web to be embedded in the cement material.

As to claim 26, it would have been obvious to one of ordinary skill in the art to heat fuse the mesh and nonwoven web (meltblown web or spunbonded web) to adhere (unite) the mesh and nonwoven web together since Schupack also teaches bonding a nonwoven to a scrim for example by melt bonding.

Allowable Subject Matter

5) Claims 29, 33 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Remarks

6) Applicant's arguments with respect to claims 17, 18, 21-28, 30-32, 34-35 and 37 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 8-14-07, 9-4-07 and 11-5-07 have been fully considered but they are not persuasive.

Applicant argues that Galer does not address the problem described by applicant on page 8 of the response filed 8-14-07. However, applicant has failed to cite any authority showing that the prior art must address this specific problem described by applicant.

Applicant's arguments regarding Canada imply that the acrylic resin coating for improving penetration prevents penetration through the fabric to form a skin. Applicant

is incorrect. The desired thickness of penetration instead of the composition of this coating affects the extent of penetration.

With respect to applicant's arguments regarding Galer's use of the riser, examiner notes that none of the claims exclude promoting penetration using a riser and consequently applicant's arguments on this issue are not commensurate in scope with the claims.

Applicant's arguments regarding the number of fabrics in the secondary prior art are not persuasive since Newman et al, Galer and Mathieu teach using non-woven fabrics in cement boards where Newman et al is relied upon for the disclosure of using both a scrim and a non-woven (i.e. the melt-blown web).

Applicant's arguments regarding the extent of the penetration of the cementitious material in Canada are not persuasive since Galer and Mathieu provide ample motivation / suggestion to penetrate the cementitious material through the facing sheet of Newman et al so as to form a cement skin and Canada's teachings as to use of acrylic resin to facilitate penetration are independent of the extent of the penetration.

7) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

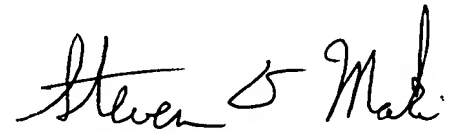
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Steven D. Maki
November 13, 2007


STEVEN D. MAKI
PRIMARY EXAMINER
11-13-07